N.S.W. DEPARTMENT OF AGRICULTURE.

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES.

P L A N T D I S E A S E S U R V E Y.

for the

TWELVE MONTHS ENDING 30th JUNE, 1955.

TWENTY-FIFTH ANNUAL REPORT.

Notes compiled by officers of the Plant Pathological Section of the Biological Branch, New South Wales Department of Agriculture, Sydney, Australia.

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COMMONWEALTH MYCOLOGICAL INSTITUTE
23 JUN 1956

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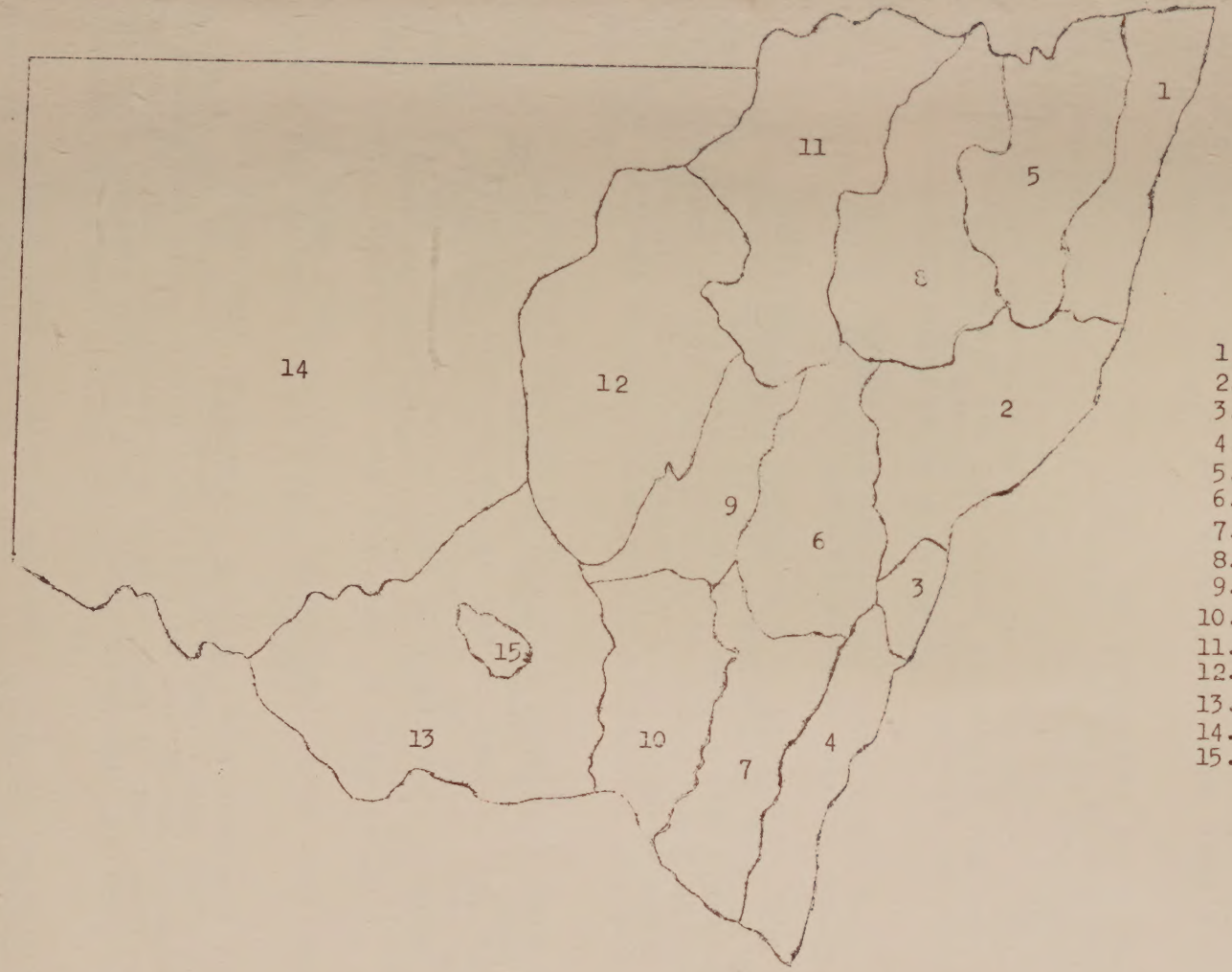

KEY.

1. North Coast (N.C.)
2. Central Coast (C.C.)
3. Metropolitan Area (M.A.)
4. South Coast (S.C.)
5. Northern Tableland (N.T.)
6. Central Tableland (C.T.)
7. Southern Tableland (S.T.)
8. North Western Slope (N.W.S.)
9. Central Western Slope (C.W.S.)
10. South Western Slope (S.W.S.)
11. North Western Plain (N.W.P.)
12. Central Western Plain (C.W.P.)
13. Riverina (R.)
14. Western Division (W.D.)
15. Murrumbidgee Irrigation Areas (M.I.A.)

DISTRICTS OF NEW SOUTH WALES.

DEPARTMENT OF AGRICULTURE.

NEW SOUTH WALES

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES

PLANT DISEASE SURVEY - 1954/5

TWENTY-FIFTH ANNUAL REPORT.

CEREALS.

WHEAT:

The estimated wheat yield for the 1954-55 harvest in New South Wales was approximately 37½ million bushels harvested from 2,780,000 acres. This is an average of 13.5 bushels per acre and is 3.2 bushels per acre less than the previous seasons yield.

Before October,1954, the prospects for a good harvest were very poor. Following the late spring rains in mid-October, however, the position improved considerably, except that in some areas excessive rain reduced the potential yield and adversely affected grain quality. The extensive rain after the prolonged dry spell resulted in extensive second growth and heavy weed growth and caused harvesting difficulties in many areas.

FROST INJURY was present in most areas but, except for a few crops, did not generally cause severe damage.

BUNT (Tilletia caries and T. foetida). The incidence of this disease appeared to be somewhat less than in the previous year. In most districts, only a few affected plants were seen but in the West Wyalong (S.W.S.) area, several crops were affected. The occurrence of bunt could be still further reduced by more widespread adoption of control measures.

STEM RUST (Puccinia graminis tritici). This disease was of general occurrence. In most cases, it developed too late to cause any serious damage but in some areas, for example around Mudgee (C.W.S.) and in the north west near Inverell, quite heavy reductions in yield were caused. The variety Festival was outstanding in all areas for freedom from stem rust. Celebration was attacked in many areas.

LEAF RUST (Puccinia triticina). Leaf rust was widespread but did not cause severe damage.

FLAG SMUT (Urocystis tritici) was recorded in crops at Gunnedah (N.W.S.), Parkes (C.W.S.) and Young (S.W.S.). In the Gunnedah area, where this disease has given trouble for a few years, the incidence was higher than in the previous year. The main variety affected was Gabo, although one crop of Baldwin (at Young) showed the disease.

LEAF SPOT or WINTER BLIGHT (Septoria tritici) was present to a small extent in some crops in southern districts.

TAKE-ALL (Ophiobolus graminis) was recorded from several areas. In the Young (S.W.S.) district, quite heavy take-all was observed in a crop sown on pasture containing a

large proportion of barley grass.

POWDERY MILDEW (Erysiphe graminis tritici) was reported in crops of several varieties in southern areas during early spring.

OATS:

FROST INJURY caused quite severe injury to many oat crops during the autumn and winter of 1955.

STEM RUST (Puccinia graminis avenae) was widespread and caused some damage to oat crops especially in south-western districts.

CROWN RUST (Puccinia coronata) was prevalent as usual in coastal oat crops, causing severe damage in some cases.

SMUT (Ustilago avenae and U. kolleri) was reported from several areas. In the Mudgee (C.W.S.) district, most crops were heavily attacked.

LEAF SPOT (Helminthosporium avenae) was common but apparently of no importance.

DOWNY MILDEW (Sclerospora macrospora), observed last year in a crop of Fulghum, was not recorded this season.

BARLEY:

No records.

MAIZE:

RUST (Puccinia sorghi) was prevalent in crops on the coast and also in several breeding lines at Glen Innes (N.T.). Some breeding lines showed very little rust and appeared resistant to the race or races present. In all cases, the rust was very heavily parasitised by Darluca filum.

LEAF BLIGHT (Helminthosporium turcicum) was widespread on the coast. Several plants affected with this disease were received from Grafton Experiment Farm (N.C.) for isolation of the pathogen in connection with testing work to be carried out there.

DOWNY MILDEW (Sclerospora macrospora) was recorded in one crop on the Hastings River (N.C.).

LEAF SPOT (Cercospora sp.) and ANTHRACNOSE (Colletotrichum graminicola) were both recorded for the first time in N.S.W. in some breeding lines from Glen Innes (N.T.). Neither disease caused severe damage.

STALK ROT (Sclerotium rolfsii associated) was seen in one maize crop on the Far North Coast during early autumn. The crop had been flooded and the stalks, inside and out, were showing a heavy growth of Sclerotium rolfsii.

LEAF DISTORTION (cause unknown). Several maize crops in the Murwillumbah (N.C.) area showed a distorted condition of the young leaves during the summer and early autumn. Affected plants were stunted and in some crops, almost 100% infection was present. It is possible that climatic factors of some sort were responsible for this occurrence.

SORGHUM:

MOULDY HEAD of sorghum was recorded from Yanco (M.I.A.) and Quirindi (N.T.) during the autumn. Superficially the condition resembled smut but on examination the black colouration was seen to be due to a profuse growth of moulds (mainly Alternaria spp.) over the heads. This was associated with a swelling and bursting of the grain, probably due to the prolonged wet weather at the time.

NITROGEN DEFICIENCY was recorded in the Kiama (S.C.) district and remedied by the application of sulphate of ammonia.

RED STAIN (Undet.) occurred commonly.

RICE:

No diseases of rice were recorded at the Biological Branch during the year.

SUGAR CANE AND FODDER CANE:

Information supplied by the Colonial Sugar Refining Co. Ltd., shows that during 1954-55, 222,213 tons of cane were crushed in New South Wales. An estimated 424 tons was lost due todisease, this representing about 0.2% of the tonnage crushed.

RED ROT (Physalospora tucumanensis) was responsible for the loss of 252 tons, compared with 105 tons last year. This year it replaced mosaic as the most important source of loss.

MOSAIC (Virus) caused an estimated loss of 145 tons.

FIJI DISEASE (Virus) was widespread in fodder cane crops in the Macleay, Hastings and Manning (N.C.) areas this year. Infection was generally heavy and in some cases could be traced to the use of planting material from diseased crops. In some cases, ratoon stunting and pokkah boeng were present with the Fiji disease and increased the damage.

In sugar cane, Fiji disease caused an estimated loss of 19 tons.

RATOON STUNTING (Virus) was widespread in sugar cane but no estimate of losses was made. The disease was also recorded in fodder cane crops on the North Coast.

PINEAPPLE DISEASE (Ceratostomella paradoxa) was less prevalent than in previous years. Dipping of seed cane in organic mercurial fungicides has been most successful in reducing the incidence of this disease.

CHLOROTIC STREAK (Virus) was less noticeable than last year. The variety Trojan is, however, susceptible to this disease and, as it is now a major variety, chlorotic streak may assume greater importance in the future.

POKKAH BOENG (Fusarium moniliforme) was recorded in some fodder cane crops on the North Coast.

MISCELLANEOUS GRASSES.

BARNYARD GRASS (Echinochloa crus-galli):

GALL SMUT (Cintractia crus-galli) was recorded from Mudgee (C.W.S.). Only one plant was affected. This disease was recorded last in 1952 at Cowra (C.W.S.).

BENT GRASS (Agrostis tenuis):

BROWN PATCH (Rhizoctonia solani, Curvularia spp. was very prevalent during the warm, moist months of December and January. Considerable damage was done to golf and bowling greens.

DOLLAR SPOT (Sclerotinia homoeocarpa) caused serious damage on lawns and sports greens.

SLIME MOULDS (mainly Physarum spp.) were very prevalent.

BUFFALO GRASS (Stenotaphrum secundatum):

BROWN PATCH (Rhizoctonia solani) was recorded in some buffalo lawns in the Sydney Metropolitan area.

BLIGHT (Piricularia sp.) was prevalent as usual.

COUCH (Cynodon dactylon):

BROWN PATCH (Rhizoctonia solani) was very prevalent during the warm, wet summer.

SMUT (Ustilago cynodontis) was present in epidemic proportions in some parts of the Sydney Metropolitan area, with 100% of plants affected.

SLIME MOULDS were common.

KIKUYU (Pennisetum clandestinum):

BROWN PATCH and STOLON CANKER (Rhizoctonia solani) was recorded from Grafton (N.C.) causing damage to kikuyu on the retaining embankment of a dam. This disease was also present in other areas.

PASPALUM (Paspalum dilatatum):

Following the heavy rains in February, paspalum in several parts of the Sydney Metropolitan area was very heavily infected with ERGOT (Claviceps paspali) and ANTHRACNOSE (Colletotrichum graminicola).

RYE GRASS (Lolium sp.):

RUST (Puccinia graminis lolii) was recorded on a rye grass from Wauchope (C.C.) in the spring. Infection was heavy.

FIELD AND FODDER CROPS.

RED CLOVER (Trifolium pratense):

FROST DAMAGE was recorded on red clover from some areas during the autumn. This was in agreement with the general damage to plants by frost this season.

RUST (Uromyces trifolii fallens) occurred in some areas and at Glen Innes (N.T.) was responsible for heavy leaf damage.

RING SPOT (Stemphylium sarcinaeforme) was more prevalent than for some years. It was recorded both on the North Coast and the Northern Tablelands after the heavy rains in the early autumn. Heavy leaf damage was caused in both areas.

BACTERIAL LEAF BLIGHT (Pseudomonas syringae) was recorded for the first time in New South Wales at Oberon (C.T.). It showed up in patches in the stand in early January after wet weather but disappeared when the weather became drier.

ROOT KNOT (Meloidogyne sp.)was recorded on red clover at Taree (N.C.) and Kyogle (N.C.). Although seen last year, it has not previously been recorded. Affected plants showed quite severe root damage and patches in the pasture were tending to die out.

MOSAICS (Virus) were widespread as in the previous year.

DODDER (Cuscuta sp.) was recorded as doing extensive damage to some red clover pastures in the Taree (N.C.) area.

WHITE CLOVER (Trifolium repens):

RUST (Uromyces trifolii trifolii-repentis) was very heavy on white clover in the Sydney Metropolitan area and at Taree (N.C.) during the spring. Weather conditions during this period were very favourable for rust development.

SCLEROTIUM STEM ROT (Sclerotium rolfsii) was recorded on white and ladino clover at Murwillumbah (N.C.). The affected stand had been waterlogged by heavy rain in February and, over 5 acres, there were numerous small patches, about 1 foot in diameter, of wilted and dying plants. Sclerotia of the fungus were abundant on these patches, which were gradually overgrown as the ground dried out.

SUBTERRANEAN CLOVER (Trifolium subterraneum):

FROST INJURY was widespread this year. most damage being done during the late autumn and winter of 1955. Stands from Bathurst (C.T.) to Albury (R.) were affected. Plants were stunted and in most cases showed a pronounced reddish colouration. In all cases, severe wrinkling of the leaf epidermis had occurred. The severe damage this season is attributed to the soft lush growth made by the plants following the late summer and early autumn rains.

STUNTING AND LITTLE LEAF (Virus). During the autumn of 1955, a large proportion of the subterranean clover pastures of southern New South Wales was affected by a new disease. Affected plants were stunted in growth and their central leaves were much reduced in size, with cupped blades and, in some cases, chlorotic margins. The outer leaves often had a reddish colouration and tended to die off. The disease was first seen on the South Coast but was later recorded from Wagga Wagga (S.W.S.), Albury (R.) Harden (S.W.S.), Young (S.W.S.) and other areas. Generally, 10-20% of plants in the pasture were affected but several infections of 70-80% were reported.

From insect transmission work carried out by the C.S.I.R.O. Division of Entomology, it is suspected that this disease is caused by a virus. So far, it has not been possible

to transmit the disease mechanically. Many of the affected plants kept under glasshouse conditions have shown recovery. The disease severely affects the carrying capacity of pastures and, if it reduces or prevents flowering, it will put out of production for some time large areas of subterranean clover in southern N.S.W.

RUST (Uromyces trifolii fallens) was of moderate occurrence in many areas.

MOSAICS (Virus) were reported from the Taree (N.C.), Kempsey (N.C.) and Robertson (S.T.) areas. Generally, growth was little affected.

LEAF SPOT (Cercospora sp.) recorded for the first time last year, caused the death of the outer leaves of several plants at Deniliquin (R.) during the spring.

ROOT KNOT (Meloidogyne sp.) was recorded for the first time in N.S.W. from East Coraki (N.C.).

BURR MEDIC (Medicago denticulata).

RUST (Uromyces striatus) was recorded for the first time in New South Wales from Taree (N.C.)and Kentwerthville (M.A.). Plants were heavily attacked and, as previous published work showed that this species was resistant to the then-prevalent Australian races of this fungus, it would appear possible that a new race has turned up.

BURN (Sphaerulina trifolii) was seen on a small patch of burr medic at West Pennant Hills (M.A.). This is the first record of this disease in New South Wales. Plants were not severely affected, although individual leaves were heavily attacked. The disease, which developed during the prolonged wet period of February and early March, gradually disappeared as the weather cleared.

LUCERNE (Medicago sativa).

RUST (Uromyces medicaginis) developed extensively this season, both on the coast and inland. At Gunnedah (N.W.S.), and Parkes (C.W.S.) and Deniliquin (R.), the autumn rains stimulated unusually heavy rust infections, some stands being rendered unfit for eating.

LEAF SPOT (Pseudopeziza medicaginis) was encouraged by the wet weather during the autumn. At Moss Vale (S.T.), a check in growth caused by a cold spell in early spring allowed the disease to become prevalent.

CROWN ROT (Sclerotium rolfsii) recorded for the first time last year, affected flooded stands at Kyogle (N.C.) in February and March.

STEM CANKER AND CROWN ROT (Rhizoctonia solani) was severe in some stands that had been flooded at Taree (N.C.).

DOWNY MILDEW (Peronospora trifoliorum) was common on the coast and BLACK STEM (Ascochyta imperfecta) was widespread. In the spring severe FROST INJURY occurred in lucerne at Pallmallawa (N.W.S.).

COWPEA (Vigna sinensis):

STEM ROT AND CANKER (Phytophthora sp.) was widespread in the Kyogle (N.C.) area during the wet early autumn, attacking both young and older stands. Infection was heavy in most

cases, 4 acres being destroyed in one case. This disease, which was first recorded in N.S.W. in 1950 in the Sydney Metropolitan area, has not previously affected cowpea crops to this extent.

LEAF SPOT (Septoria vignae) was present in some crops in the Kyogle (N.C.) area during the autumn.

TOBACCO

BLUE MOULD (Peronospora tabacina) was very severe in some tobacco seed-beds at Tenterfield (N.T.) in spite of benzol vapour treatment.

ROOT KNOT (Meloidogyne sp.) was present as usual.

PEANUT

LEAF SPOT (Cercospora personata) caused almost complete defoliation of some introduced peanut lines at Grafton (N.C.) during February.

CANE FRUIT

BOYSENBERRY, YOUNGBERRY.

ANTHRACNOSE (Elsinoe veneta). Wet conditions on coast and tablelands during summer and autumn favoured the development of this disease on current season's growth and reports of severe infection were received from Batlow (S.W.S.), Orange (C.T.) and the Metropolitan area.

CITRUS FRUITS.

PHYTOPHTHORA ROOT, COLLAR AND FRUIT ROT (Phytophthora citrophthora). Weather conditions throughout winter and spring 1954 were dry in coastal N.S.W., and as a result trees on lemon stock in mature to old orchards in the Central Coast, Hills and Windsor district showed considerable die-back, their root systems affected in the wet period of the previous autumn being unable to support new growth and increased transpiration rate of the spring growth cycle. From mid summer to winter 1955 rainfall was above average in coastal citrus districts and many orchards in low lying districts were waterlogged for long periods, with resultant marked increase in root rot activity. The full extent of damage to these trees is not yet apparent, but many mature to old trees which survived the 1949-52 wet years will probably succumb in the coming season. On the Central Coast section it is estimated that 4,000 acres of trees are uneconomic as the result of root disease and in the Hawkesbury River and Hills Districts (M.A.) about 80,000 trees are in a similar condition. Collar rot also was active during autumn months particularly in low lying, damp orchards throughout the coastal section.

Deterioration due to root rot activity was also reported in mature plantings at Menindee (W.D.).

In the Murrumbidgee Irrigation Areas good progress has been made in the installation of the drainage and deep well pumping schemes. By lowering the watertables these may be a means of extending the life of citrus on rough lemon stock, though root rot trouble will not be eliminated. Evidence of root rot is still present in all older plantings in this area.

During autumn and early winter brown rot was reported to be severe on all varieties at Ourimbah (C.C.) but less severe at Gosford (C.C.). Some losses also occurred in sections of the Hawkesbury River and Hills districts (M.A.) particularly on Washington Navel oranges. Brown rot was also reported from Murwillumbah (N.C.) on Washington Navel and Valencia oranges and Emperor mandarin fruit.

Fruit losses after harvest particularly of Washington Navel oranges from lowland orchards in the Gosford district (C.C.) have been increasing in recent years. The ethylene colouring treatment of early navels from lowland orchards has been observed to increase wastage due to brown rot as compared with similar fruit which was untreated. This increased incidence did not occur in highland grown fruit.

Collar rot and shoot blight of nursery stock was reported during the autumn from several Sydney Metropolitan nurseries.

BLACK SPOT (Guignardia citricarpa)

Development of black spot in Central Coast orchards was of minor importance during spring and summer. Orchards where the recommended spray programme was used were remarkably free of disease. In a minority of unsprayed orchards black spot caused some concern particularly with old trees.

Black spot was recorded as active in the Hills district (M.A.) on Valencia oranges following hot days in August 1954. Later reports indicated that the disease was widespread but was not causing heavy losses this season. It was also prevalent on second crop Valencias in the Hills district during autumn 1955. During April, May and June a considerable development of speckled blotch occurred in orchards in the Hills district, Windsor, Pitt Town (M.A.) and Ourimbah (C.C.) sections. Washington navel oranges were chiefly affected but the condition also occurred on Valencia oranges, Emperor mandarins and Wheeny grapefruit. The reason for the current season's outbreak is not known, but it has been noted that previous occurrences of this disease follow autumns of protracted wet weather. Speckled blotch is considered to be a manifestation of black spot, but its development during the winter, and on sheltered fruit is quite different from the usual disease in Valencia oranges. Spots are dark, restricted in growth and fructifications are not formed on them.

MELANOSE (Diaporthe citri). Although no rain occurred during the period of spring blossoming and growth dews during cool spring nights were ideal for spore production and for infection to take place. Melanose was therefore severe on unsprayed fruit, and considerable destruction of shoot growth was noted in the Hills and Hawkesbury River districts (M.A.). Conditions favourable to infection occurred throughout the summer and autumn and as a result damage due to melanose is reported to be the worst for very many years, in Central Coast orchards. Damage includes fruit blemish, die-back and malformation of young growth and die-back of limbs. This last type of injury has been particularly severe on mature to old Emperor mandarin, Seville orange and Washington Navel oranges. In the Ebenezer district (M.A.) during the past few years many blocks of Emperor mandarins have deteriorated badly as a result of melanose wood infection following scald, and some are now derelict.

Mature Eureka lemons affected with shell bark in the Gosford and Hills districts have also deteriorated badly due to melanose invasion of weakened tissue.

STEM END ROT (Diaporthe citri). In storage experiments with lemons at the Gosford Fruit Wastage Research Laboratory losses due to stem end rot in untreated fruit were of the order of 50% after 4 months. Tree condition and age are important factors contributing to incidence of stem end rot in stored lemons. The disease is of minor importance on fruit from young vigorous trees. On fruit from older trees or trees in a weakened condition stem end wastage is considerably increased.

SCAB (Sphaceloma fawcettii scabiosa). Scab infection was unimportant on main crop lemons in coastal orchards, due to dry weather at blossoming and very general application of control sprays. However, because of extended blossom periods and poor spraying conditions during the summer intermediate crop lemons were badly affected in most sections. Scab on rough lemon stocks also caused considerable stunting of nursery stock in the Metropolitan area and Gosford (C.C.).

BROWN SPOT (Cause not known). Losses of fruit and damage to young foliage was generally rather slight during spring 1954, though a number of orchards in the Ebenezer area (M.A.) suffered moderate injury. However, prolonged periods of rain during summer and autumn resulted in considerable infection of half grown and maturing fruit in January-April and some leaf damage in Central Coast and Windsor district orchards. Losses in individual orchards were very heavy.

In spray trials Streptomycin gave no control of fruit or leaf infection, Zineb and mercury fixtan were promising. In several growers' blocks where 2 or 3-spray programmes of Bordeaux and Zinc Bordeaux have been used over the past 3 years losses were slight, and it seems possible that cumulative effect of the spraying is beginning to show.

SEPTORIA SPOT (Septoria depressa). Routine spraying for control of spot has eliminated Septoria as a major cause of loss in the M.I.A. but the disease was severe in a few orchards where spraying was not done. Ideal weather for infection of fruit occurred during May in the Murrumbidgee Irrigation areas but little frost was experienced until towards the end of June. Consequently Septoria spot did not develop to any appreciable extent in early picked fruit.

ARMILLARIA ROOT ROT (Armillaria mellea). Extension of the disease occurred in infected orchards at Maroota and Hawkesbury River (M.A.) and in the Gosford highlands (C.C.). Humid weather during the autumn encouraged the production of fructifications which were extremely abundant in some orchards. Very little fumigation of infected land is now being carried out.

SOOTY BLOTCH AND FLY SPECK (Gloeodes pomigena and Leptothyrium pomi.) Favoured by humid conditions these diseases developed very heavily on Washington Navel oranges in some Hills district (M.A.) orchards and Gosford (C.C.).

BLUE AND GREEN MOULD (Penicillium digitatum and P. italicium). Many records were received during the summer of infection of late hanging Valencias in Camden (S.C.), Hills district (M.A.) and from the Hawkesbury Agricultural College. Second crop mandarins in the Hills district were also affected. Infection followed attack by fruit fly

which was more prevalent than for many years. In the Gosford area (C.C.) over the past few seasons there has been a marked improvement in the wastage position in packed fruit due to the adoption by the packing houses of the sodium ortho-phenyl-phenate-sodium hydroxide treatment, developed at the Citrus Fruit Wastage Research Laboratory.

SUDDEN DEATH (Undetermined). Additional cases were reported from Terrigal, Lisarow, Ourimbah (C.C.), Dooralong (S.C.), Mangrove Mountain (C.C.) and the M.I.A. No progress has been made in the identification of the cause of this disease.

SCALY BUTT (Virus). New occurrences are becoming rare because of the general appreciation of the necessity for bud certification.

SHELL BARK (Suspected virus). Lemons in coastal orchards and at Griffith and Leeton (M.I.A.) showed evidence of the onset of Shell Bark.

STEM PITTING-TRISTEZA (Virus) unchanged.

PSOROSIS A. (Virus). No further reports.

PSOROSIS-TYPE VIRUS (?Florida gummosis). No further reports.

CRINKLE LEAF (Virus). In addition to the varieties previously reported to be infected at Narara Citrus Experiment Station (C.C.) it has now been established that the variety Genoa is infected with this disease. Symptoms are somewhat variable in intensity, some trees showing very few crinkled leaves and fruit. Affected trees have a more upright restricted type of growth than normal.

KNOBBY BARK (Cause unknown). In a number of orchards in the Pitt Town area (M.A.) mature orange trees have been located, whose rough lemon stocks show the development of knobby bark. No outgrowths are present on the scion and no deleterious effect could be observed.

YELLOW LEAF (Magnesium deficiency) was again very noticeable in coastal citrus areas particularly where sulphate of ammonia has been used as the sole source of nitrogen. Many Valencia oranges in the Gosford (C.C.) showed the condition severely during the winter. It is considered to be an important contributory factor to the problem of alternate cropping. Magnesium deficiency was also reported from Tocumwal (R.) in acid soils and Bourke (W.D.) in alkaline soils high in sodium.

Magnesium deficiency symptoms are becoming more evident throughout the M.I.A. than in previous years and are appearing in trees on heavier types of ground. It is evident that liming may accentuate the symptoms.

EXANTHEMA (Copper deficiency) was reported to be very prevalent in lighter soils of the Maroota and Hills district (M.A.) but was unimportant in the Central Coast. It was recorded also from Sandy Hollow and Aberdeen (C.C.) somewhat extending westward the known range of this deficiency.

MOTTLE LEAF (Zinc deficiency) was again rather prevalent in orchards in the Windsor area (M.A.) and at Pitt Town (M.A.) and Kurrajong (M.A.), (acid soils), as well as in Riverina and western division (alkaline soils). In the Mangrove Mountain, Somersby district (C.C.) where mild to moderately severe zinc deficiency symptoms were observed in a number of orchards it is suspected that the use of mixed

fertilizers containing considerable quantities of superphosphate are possibly contributing to the development of mottle leaf.

MANGANESE DEFICIENCY was noted in a Pitt Town orchard (M.A.) and at Glenoric (M.A.) where the condition accompanied poor growth and low cropping. Mild symptoms were observed in the spring in a number of Gosford (C.C.) orchards, but the condition was not regarded as important.

POTASSIUM DEFICIENCY. Several instances of potassium deficiency in tangelos and Washington Navels at Narara (C.C.) were proven by injections of potassium sulphate and potassium chloride into chlorotic leaves. Foliage sprays (3) on one tree of potassium chloride effected a partial improvement as compared with the control.

EXPEROR MANDARIN SCALD. Trees in several Ebenezer orchards (M.A.) were mildly affected. Chemical analyses of leaves indicated excessive nitrogen and rather low potash. This disorder is very detrimental to Emperor mandarins as it allows the establishment of Diaporthe (q.v.) in weakened wood.

DRY STEM (Physiological). This has occurred on an extensive scale on some Griffith (M.I.A.) farms. In particular a late hanging crop of Valencia oranges at Ballingal showed 25% affected fruit.

ACID SOIL INJURY. Cases of injury to young trees on Trifoliata stock were reported from Hanwood (M.I.A.) where the use of sulphate of ammonia on intercrop vegetables had reduced the pH to 4.2 and from Pitt Town (M.A.) and Dooralong (C.C.). Chemical analysis showed excessive manganese in the leaves of some of those trees associated with a tar-spot condition. An unthrifty condition of eighteen year old Valencia orange trees on Trifoliata stock at Dooralong (C.C.) accompanied by death of roots was found to be due to excessive soil acidity (pH 4).

"WINTER YELLOWING" (Cause unknown). This disorder again showed up rather generally in young trees in coastal orchards which had made very vigorous late summer growth. Considerable root loss has occurred in the most severe cases. Yellowing again occurred before the onset of cold weather. It was also noted affecting 12 year old trees at Cornwallis (M.A.) where no fruit had been set as a result of hormone injury following weed spraying along a headland. These trees had made very vigorous summer growth which showed severe "yellows"; adjacent rows of trees which had matured a crop of fruit and had consequently not made much summer growth were not affected. Twelve year old Ellendale mandarins at Lisarow (C.C.) which were carrying no crop and had received excessive nitrogen as urea foliage sprays were extremely badly affected with yellows and partly defoliated. In the M.I.A. also yellows occurred on young trees, particularly where vegetables had been grown between the rows.

SEVILLE DECLINE (Cause unknown) continues to cause concern in several Colo (M.A.) orchards.

ROUGH LEMON DECLINE (Cause unknown) Further extension of this trouble occurred in a Colo orchard (M.A.) and is suspected at Pitt Town (M.A.), and Windsor (M.A).

YELLOWING AND POOR CROPPING is under investigation in an Orangeville (S.C.) orchard. The affected trees are growing in shallow soil overlying ironstone gravel. Drainage is poor. Chemical analysis of leaves

indicate low phosphate and potash.

POME FRUIT.

The apple crop was very light due in part to the record crop carried last season and in part to the occurrence of late spring frosts. Pear yields were good and the fruit generally was of high quality, due, in large measure, to the widespread replacement of sulphur by thiram in spraying schedules for black spot control.

APPLE:

BLACK SPOT (Venturia inaequalis). Infection conditions were very favourable during October and November in tableland districts and infection was very heavy on non-sprayed non-bearing trees, and heavy on trees treated with an inadequate schedule of sprays. In such orchards autumn infection was also severe. However, in orchards where established spraying schedules were followed closely, infection was negligible on fruit, although some leaf infection was evident late in the season.

Normal dry spring weather returned to the Murrumbidgee Irrigation Areas, and despite the presence of abundant ascospores no infection occurred.

POWDERY MILDEW (Podosphaera leucotricha) was more severe than usual in tableland and coastal districts. The highly susceptible varieties Jonathan, Rome Beauty and Gravenstein were severely damaged in some orchards and some instances of heavy infection on Granny Smith were observed. This higher incidence of powdery mildew may be related in part to the increasing use of organic fungicides for black spot control, and in part to an unusually favourable season.

LIMB CANKER AND DIEBACK (Botryosphaeria ribis). This disease occurs only in coastal orchards, the varieties Willie Sharp and Kirk's Carrington being most susceptible. The shoot blight and spur blight phase of the disease was prevalent this season but the limb canker phase was of no consequence.

RIPE ROT (Gloeosporium sp.) again caused substantial losses in a few coastal orchards, especially in the variety Willie Sharp. It was also recorded in November at Camden (S.C.) on Granny Smith and Trevitt and at Cobbitty (S.C.) on Gravenstein. It developed to a slight degree on Rome Beauty and Delicious in cool store at Batlow (S.W.S.) and Orange (C.T.) respectively.

APPLE MOSAIC (Virus) was again of widespread occurrence but symptom expression was less intense than in the previous season.

GREEN CRINKLE (Virus). A disease which is believed to be green crinkle was observed on Granny Smith in two orchards at Uralla.

FLAT LIMB (? Virus) occurs widely on Gravenstein, and is the factor limiting plantings of this valuable early maturing variety.

PHYSIOLOGICAL DISEASES. Although crops were light and fruit size large the mild season was not conducive to the development of physiological disorders. A few instances of bitter pit and of watercore and crinkle were reported.

NUTRITIONAL DISEASES. Magnesium deficiency was detected at Coonabarabran (N.W.P.), potassium deficiency on the Murrumbidgee Irrigation Areas and at Young (S.W.S.) and zinc deficiency at Maroota (M.A.) and on the Murrumbidgee Irrigation Areas.

STEM ROT (Sclerotium rolfsii). Approximately 50 young trees died in January and February in a planting of approximately 130 Granny Smith apples at Carlingford (M.A.). The land had carried tomatoes and beans prior to planting with apples during the 1954 winter.

SOOTY BLOTCH (Gloeodes pomigena) Very heavy infection occurred in the autumn on Granny Smith in an orchard at Bilpin (C.T.) which had been sprayed in spring and summer with an organic mercury fungicide schedule for black spot control. It was also recorded on unsprayed trees at Hornsby (M.A.).

PEAR.

BLACK SPOT (Venturia pyrina). The incidence of pear scab was similar to that of apple scab except that on the Murrumbidgee Irrigation Areas there was some infection of pears particularly in late spring. However no loss was experienced in fruit grown for canning.

BLAST (Pseudomonas syringae) was of no consequence this season.

FLECK (Fabraea maculata). Some infection was noted at several localities on the Northern Tableland.

NUTRITIONAL DISEASES. Potassium deficiency was detected on the Murrumbidgee Irrigation Areas and lime induced chlorosis at Hay (R.).

STONY PIT (Virus), is present mainly in the Orange district (C.T.) in Packham's Triumph, Beurre Bosc and Williams bon Chretien.

QUINCE.

FLECK (Fabraea maculata), was prevalent in coastal areas and on the Northern Tableland.

STONE FRUITS.

Stone fruit crops were generally good.

ALMOND.

SHOT HOLE (Clasterosporium carpophilum). Infection of fruit, leaves and shoots was severe wherever control measures were inadequate.

APRICOT.

BACTERIAL CANKER (Pseudomonas syringae) was again of no significance on the Murrumbidgee Irrigation Areas, but slight damage occurred on young trees at Maitland (C.C.) and at Goulburn (S.T.).

BROWN ROT (Sclerotinia fructicola), caused some losses in early apricots in coastal districts.

SHOT HOLE (Clasterosporium carpophilum). On the Murrumbidgee Irrigation Areas infection was slight, in marked contrast to last season. Heavy infection occurred in coastal and tableland areas where spring infection conditions were favourable.

FRECKLE (Fusicladium carpophilum). An epiphytotic of freckle occurred in coastal and tableland districts, losses due to cracked and withered fruit being commonly 100% on untreated trees.

BLACK HEART (Verticillium dahliae). Losses are still occurring in young trees on the Murrumbidgee Irrigation Areas. The disease was also recorded at Campsie (M.A.) and at Koraleigh (W.D.).

RUST (Puccinia pruni-spinosae). Heavy infection and premature defoliation occurred in coastal districts.

ROOT ROT (Phytophthora cinnamomi). The flood rains of late January and February led to further losses in young trees in coastal regions.

INTERNAL BREAKDOWN (Non parasitic). This condition was more prevalent on the Murrumbidgee Irrigation Areas than for a number of years. Fruit on young vigorous trees was most susceptible.

CHERRY.

BACTERIAL CANKER (Pseudomonas syringae). Infection was very slight this season. Some fruit infection occurred at Orange (C.T.) in December.

BROWN ROT (Sclerotinia fructicola) caused substantial losses in early maturing varieties at Young (S.W.S.) Orange (C.T.) and on the Northern Tableland. Growers using thiram reported good control.

CHERRY WHITE CRINKLE (?Genetical abnormality), occurs very commonly on St. Margaret particularly in the Orange district (C.T.). The yield of affected trees is progressively declining. The condition has been present for many years.

SWEET CHERRY CRINKLE LEAF (?Genetical abnormality) was detected in an old planting of Werder's Early Black at Orange (C.T.). Yield in all of the 50 trees involved, had declined to practically nothing. This condition was first observed by the grower some ten years ago.

? MOTTLE LEAF (Virus). Symptoms resembling those described for the virus disease mottle leaf were observed on St. Margaret, Florence and Napoleon in several orchards at Orange (C.T.).

? TATTER LEAF (Virus). Symptoms resembling those described for the virus disease tatter leaf were observed on two limbs of a St. Margaret tree at Orange (C.T.).

? RASP LEAF (Virus). Symptoms resembling those described for the virus disease rasp leaf were observed on several leaves of a few St. Margaret trees at Orange (C.T.) and at Batlow (S.W.S.).

NECTARINE.

BROWN ROT (Sclerotinia fructicola). Some losses were sustained in coastal and tableland orchards, particularly in the later maturing varieties.

RUST (Puccinia pruni-spinosae). Premature defoliation was again common in coastal orchards.

LEAF CURL (Taphrina deformans). Infection was heavy wherever control measures were neglected.

FRECKLE (Fusicladium carpophilum). An epiphytotic of freckle occurred in coastal regions and some growers reported failure to control the disease. In such cases the schedule of sprays recommended by this Department had not been followed.

?PEACH ROSETTE MOSAIC (Virus). A disease resembling peach rosette mosaic was observed in Goldmine nectarines in two orchards at Orange (C.T.). The disease which has spread rather rapidly within these orchards was first observed by the growers some ten years ago.

PEACH.

BROWN ROT (Sclerotinia fructicola). An epiphytotic occurred on the Murrumbidgee Irrigation Areas affecting particularly Phillips' Cling and Pullar's Cling. A loss of approximately 4,000 tons (22% of the crop) was sustained as a result of the combined activity of Oriental peach moth and brown rot. It was not possible to assess the separate losses caused by these two agencies.

In coastal districts there was some brown rot in early maturing varieties and substantial losses were sustained with late varieties. The mid season varieties matured during the only dry period of the season and were relatively free of disease.

In tableland districts some brown rot occurred throughout all varieties, but heavy losses were experienced with the late maturing ones.

RUST (Puccinia pruni-spinosae). Premature defoliation occurred again in coastal orchards, being particularly severe with the early maturing varieties. Rust was of no consequence in tableland districts but on the Murrumbidgee Irrigation Areas there was a build-up of inoculum late in the season. Although some varieties were prematurely defoliated, fruit infection was not experienced.

LEAF CURL (Taphrina deformans). Heavy infection occurred wherever control measures were neglected or imperfectly applied.

FRECKLE (Fusicladium carpophilum). Infection was heavy in coastal orchards wherever the control measures recommended by this Department were not closely followed. No infection was observed in tableland or inland areas.

ROOT ROT (Phytophthora cinnamomi). Following the flood rains of late January and February and the persistently wet autumn, severe losses occurred in nurseries and in young orchard plantings. In the Nurseries in the Metropolitan area approximately 60,000 peach trees, ready for distribution this winter were either killed or rendered unsaleable.

SHOT HOLE (Clasterosporium carpophilum). Severe fruit infection occurred at Mudgee (C.T.) Cowra (C.T.), Gundagai (S.W.S.) and on the Murrumbidgee Irrigation Areas. In the latter district the infection was heavy only in those blocks surrounded by neglected almonds. Leaf infection was common in all districts and in some orchards shoot infection was severe.

CROWN GALL (Agrobacterium tumefaciens). Several instances of crown gall infection in orchards were reported. Nurserymen in the Metropolitan area continue to budget for approximately one third loss of their plantings due to crown gall.

?PEACH ROSETTE MOSAIC (Virus). Symptoms resembling those described for peach rosette mosaic were observed on a few J.H. Hale trees in two orchards at Orange (C.T.).

PLUM.

BROWN ROT (Sclerotinia fructicola). Heavy infection occurred on early maturing plums in coastal districts. Infection was general on midseason and heavy on late plums at Orange (C.T.) and was a little more prevalent than usual on prunes on the Murrumbidgee Irrigation Areas.

RUST (Puccinia pruni-spinosae). Heavy infection occurred on prunes at Young (S.W.S.) during the rains of February and March and by the end of March 90% of trees in the district were defoliated. There was also a considerable amount of infection late in the season on prunes on the Murrumbidgee Irrigation Areas. Severe infection and early defoliation again was common with early maturing plums in coastal districts.

SHOT HOLE (Clasterosporium carpophilum). Leaf infection was general.

PLUM MOSAIC (Virus). Mosaic symptoms were observed occasionally in coastal areas.

TROPICAL FRUITS.

BANANA:

BUNCHY TOP (Virus). Records compiled by the Division of Horticulture show that a total of 2,809 infected plants were found and destroyed during the year, a decrease of 295 plants on the previous year's figures. Bunchy top records for the four preceding years have been: 1950-51, 3831; 1951-52, 3654; 1952-53, 2427; 1953-54, 3164. As the area planted to bananas increased by about 2,000 acres (to 30,144 acres) during the year, the incidence per acre is now as low as in 1952-53.

LEAF SPOT (Cercospora musae). Leaf spot was extremely severe and losses were heavy over the whole of the Far North Coast Region. The disease was favoured by a very wet summer and autumn. Relatively low fruit prices prevailed and generally little protective spraying was carried out by growers.

SPECKLE (Cause undet.). Losses of foliage as a result of this disease were also very heavy. In former years the association of red spider (Tetranychus sp.) with this disease was so strong that even if a fungal pathogen was also involved it was regarded as largely in a secondary capacity. This year Speckle was very destructive even though the wet season was not favourable for red spider and in addition Speckle was controlled by a wide range of fungicides. The possibility of Speckle being caused by the parasitic fungus Ramichloridium musae is being examined.

PASSIONFRUIT:

ROOT ROT (Phytophthora cinnamomi) was responsible for the loss of many vines during the late summer and autumn. Heavy and frequent rains during the late summer and autumn waterlogged many otherwise fairly well-drained soils and favoured the pathogen. Losses were severe in most coastal areas.

FUSARIUM WILT (Fusarium oxysporum). During the autumn several outbreaks of this disease occurred in Gosford (C.C.) Highland plantations. At Kulnura in this area 75% of the vines of a vigourous plantation on well drained land were dead by May. Prior to this year one outbreak only had occurred in the Gosford district and involved a few vines only.

WOODINESS (Virus). This disease was again general in most coastal plantations.

BROWN SPOT (Alternaria passiflorae). Losses from this disease were more severe than usual though regular spraying where practised, maintained control of the disease.

MISCELLANEOUS FRUITS.

GRAPES:

DOWNY MILDEW (Plasmopara viticola). Dry conditions in spring and early summer depressed the development of downy mildew in vineyards in the Metropolitan area, Hunter R.(C.C.), Orange (C.T.) and Molong (C.W.S.) but from December 1954 onwards rain and prolonged periods of high humidity in the coastal section resulted in heavy mildew infection and made spraying difficult and minor defoliation occurred. In the Bathurst (C.T.) section the rainfall was not so excessive and mildew was well controlled by Bordeaux and copper oxychloride sprays. In this area Thiram failed to prevent a considerable development of mildew.

In the Murrumbidgee Irrigation Areas downy mildew appeared in late December following a period of moist humid weather and foliage and fruit damage were severe in vineyards where too few sprays had been applied. The disease was particularly bad in the Mirrool section where losses up to 50% of fruit occurred in some vineyards. An extension of the disease occurred during late summer when wet weather again was experienced.

A widespread development also occurred in lower Murray River (W.D.) dried fruit areas and wine areas of the Upper Murray (W.D.) during December but was checked by hot weather; humid conditions and rain during the late summer resulted in a very heavy infection at Tocumwal, which was not controlled by Ziram sprays and in one large vineyard a yield reduction of 100 tons (¼ crop) is attributed to the use of Ziram in place of Bordeaux mixture. Mildew development following rain during early March affected new growth throughout the lower Murray settlement also but the attack came too late to affect fruit and sufficient mature healthy leaves remained to carry on the vines.

BLACK SPOT (Elsinoe ampelina) was well controlled at Coraleigh (W.D.) and other lower Murray settlements on sultanas where Thiram and Ziram are in general use. In the Murrumbidgee Irrigation Areas a mid-summer outbreak occurred in some vineyards, particularly of Ohanez grapes. No disease occurred where the full Thiram programme was applied early in the season.

POWDERY MILDEW (Unicinula necator). Active development was reported from lower Murray area (W.D.) during December but the disease was well controlled by sulphur dusting. In the Koraleigh settlement (W.D.) Bordeaux mixture has been used in the past for black spot control, but the now universal use of Ziram and Thiram and the discontinuance of Bordeaux has resulted in increased powdery mildew development. Powdery mildew was also noticeable at Orange (C.T.), where Thiram had been used, but not on vines sprayed with Bordeaux mixture or copper oxychloride.

FRUIT ROT (Botrytis cinerea and other moulds and yeasts). Continuous rain just prior to harvesting resulted in heavy losses of fruit in the Hunter River wine growing area (C.C.) and in the Murrumbidgee Irrigation Areas. In the Murrumbidgee Irrigation Areas only 11,000 tons instead of an anticipated 23,000 tons was harvested as the result of Botrytis and downy mildew attack. It was observed that bunch rots were severest where downy mildew was controlled and the foliage cover dense; where severe downy mildew had caused defoliation bunch rots were at a minimum. In the Lower Murray region (W.D.) a period of high humidity with some rain just prior to the commencement of the sultana harvest resulted in some moulding of berries on the vine and of the first harvesting on the racks. Subsequent warm dry weather halted the further extension of the trouble and the quality of dried fruit was generally good.

At Koraleigh (W.D.) the humid weather persisted rather longer and there were some losses and lowering of grade due to moulding on the racks. Cold dip was reported to have lessened mould damage. Hot dips caused slightly greater skin cracking and rendered the fruit more prone to damage through mould than cold dip, which removes only the bloom. Moulding of table grapes in the Orange (C.T.) - Molong (C.W.S.) area was only very slight.

BORON TOXICITY. Mild boron toxicity was reported to be very evident throughout the Coomealla (W.D.) settlement in autumn '55. This area is only recently planted up.

BUNCH STEM DIE BACK (Undetermined). This condition, which was noted last year, was again in evidence in the Orange (C.T.) - Molong (C.W.S.) area, being particularly serious at Molong. Black muscat appears to be the variety chiefly affected. The disorder is under investigation.

BORDEAUX BURN. In the Orange-Molong district (C.T.) very general injury resulted from the use of Bordeaux sprays this season. Mature leaves were affected, showing marginal burning. The injury became apparent during a period of damp easterly winds and was less evident where vines were protected. Vines sprayed with copper oxychloride showed considerably less injury, and in a small experimental spray trial vines sprayed with Zineb were outstanding for freedom from burn. A similar type of injury occurred at Wedderburn and Orchard Hills (M.A.).

FROST INJURY. In some Murrumbidgee Irrigation Areas vineyards Black Shiraz and Sultana leaves were observed showing small clear areas between the minor veins. This was considered to be an unusual form of frost injury.

RETARDED GROWTH IN DORADILLA GRAPE. Early in November vines in some blocks at Griffith (M.I.A.) showed delayed foliation, retarded growth and poor blossoming. It was considered that this was the result of partial waterlogging in January, 1954, coupled with a very late harvest of the crop in 1954.

MULBERRY:

LEAF SPOT (Septogloeum mori) was prevalent particularly in inland districts.

BACTERIAL BLIGHT (Pseudomonas mori) was prevalent in coastal and tableland districts.

STRAWBERRY:

GREY MOULD (Botrytis cinerea). Rather humid conditions over the ripening season resulted in very heavy losses from Botrytis moulding of fruit in the Metropolitan area and at Terrigal and Narara (C.C.).

POWDERY MILDEW (Sphaerotheca humuli) was found attacking a Departmental seedling variety under trial at Casula (M.A.) and later at Narara (C.C.). The varieties of strawberry commonly cultivated in N.S.W. do not appear to be susceptible to mildew and this quite promising seedling has been discarded because of its weakness.

LEAF DISEASES (Diplocarpon earliana, Mycosphaerella fragaeae and Dendrophoma obscurans) were particularly prevalent following the prolonged wet weather of summer and autumn.

VIRUS DISEASE. The prevalence of virus disease is still the chief reason for the depressed state of the strawberry industry in N.S.W.

OLIVE:

OLIVE KNOT (Pseudomonas savastanoi). A suspected case of this disease in a Yanco (M.I.A.) orchard is under investigation.

WALNUT:

BACTERIAL BLIGHT (Xanthomonas juglandis) was prevalent in tableland and coastal districts.

ORNAMENTALS.

ANTIRRHINUM:

RUST (Puccinia antirrhini) caused severe damage of snapdragon plants. All varieties grown are susceptible to the disease. The disease was first recorded in N.S.W. in 1952 and this year heavy infections were reported from most districts of N.S.W.

AZALEA:

LEAF GALL (Exobasidium vaccinii) caused heavy infections on a number of bushes in the Sydney Metropolitan area. The incidence of this disease has become increasingly severe over the last few years.

BEGONIA:

POWDERY MILDEW (Oidium sp.) which was recorded for the first time in 1953, caused damage to Rex and Tuberous begonias at Bathurst (C.T.) and Canberra (S.T.). This disease seriously weakens the plants causing leaf blighting and shrivelling.

LEAF SPOT AND STEM ROT (Botrytis cinerea) was reported to be of moderate incidence on tuberous begonias in the Sydney Metropolitan area and at Orange (C.T.).

BIGNONIA: (B. grandiflora)

LEAF SPOT (Cercospora sp.) was recorded for the first time in N.S.W. on this plant. The disease was very severe causing yellow spotting. The lower leaves of the vine were most heavily infected.

BRUSH BOX (Tristania conferta):

LEAF SPOT (Cercospora sp.) was reported causing heavy infection quite commonly on young trees in a Metropolitan garden.

CALLISTEMON:

LEAF SPOT (Cercospora sp.) was recorded for the first time in N.S.W. causing moderate infection on the older leaves of yearling stock at nurseries in the Sydney Metropolitan area.

CAMOMILE:

FLOWER BLIGHT (Ascochyta chrysanthemi) was recorded for the first time in N.S.W. on this crop. The disease had not caused much damage to the crop as the main infection had not appeared until after the flower harvest was completed.

CAMELLIA (C. sasanqua):

LEAF GALL (Exobasidium camelliae) was reported from a flower garden at Lindfield (M.A.) arising from a single infection point only.

CARNATION:

ROOT ROT (Rhizoctonia solani) was reported causing the loss of a large number of carnations growing in metropolitan flower gardens.

CROWN ROT (Sclerotium rolfsii) was severe on a number of carnation varieties growing at flower gardens in the M.A.

CHRYSANTHEMUM:

RAY BLIGHT (Ascochyta chrysanthemi) was recorded for the first time in N.S.W. at a flower farm at West Pennant Hills (M.A.). Symptoms of the disease are rotting of the petals and disc of the flowers and a certain amount of leaf blotching. The disease develops rapidly under wet conditions such as were experienced early in 1955. The early flowering varieties seem to be more severely affected than the mid and late varieties, some of which, however, are affected. A few varieties appear to have some resistance to the blight.

ROOT ROT (Phytophthora sp.) was very prevalent in the M.A. this year due to the very wet season experienced. Rotting of stolons as well as the roots occurred.

CORNFLOWER:

BLIGHT (Tomato spotted wilt virus) caused 25% losses in a crop in the Sydney Metropolitan area. The virus was spreading through the crop rapidly. Symptoms of cucumber mosaic virus were present in the same crop.

ROOT AND STEM ROT (Cause undetermined) was reported on young plants from the North Western Slopes. The root rot extended into the stem causing a breakdown and watersoaking of the stem together with yellowing and discolouration of the vascular tissue.

CREPE MYRTLE:

POWDERY MILDEW (Uncinula australiana). The perfect stage was found in abundance on a tree at Tamworth (N.T.). The imperfect stage is commonly found but a heavy production of perithecia is rarely seen.

CYCLAMEN:

LEAF NEMATODE (Aphelenchoides sp.) was recorded for the first time in N.S.W. on this host by a grower at Belmore (M.A.). The nematode causes red spots and blotches on the leaves and proves very destructive in glass and bush house plants.

LEAF AND FLOWER MOULD (Botrytis cinerea) was recorded for the first time in N.S.W. on plants of this host in the Sydney Metropolitan area.

DAFFODIL:

LEAF SCORCH (Stagonospora curtisii) was reported from Southern Tableland. This disease is rarely found on daffodils and the incidence this year is believed to be due to very wet weather conditions. Leaf tips became reddish brown soon after appearing above the soil and many leaves eventually died.

DELPHINIUM:

LEAF SPOT (Pseudomonas delphinii) caused some damage on delphinium in the Sydney Metropolitan area.

ECHIUM:

FASCIATION (non-parasitic) was recorded on this plant for the first time in N.S.W. in the Sydney Metropolitan area. The flower stalk showed both linear and ring fasciation. The stalk had become expanded at the end forming a funnel shaped structure, small leaves and flowers were being produced in the exposed cavity of this funnel, as well as on the outside.

GERANIUM:

COLD INJURY caused the development of a reddish colouration on leaves of a number of geranium plants from Hillston (W.D.).

GLADIOLUS:

DRY ROT (Sclerotinia gladioli) was severe in a number of varieties after autumn digging on a metropolitan

flower garden where there had been no crop rotation practised. This had resulted in the build up of inoculum in the soil over a number of years giving finally a very heavy infection of Sclerotinia.

LEAF SPOT (Stemphylium botryorum) was severe under warm humid conditions in the Sydney Metropolitan area. One nursery reported that the disease was particularly severe on the varieties Alladin, Lancaster and Daisy Mae, while other varieties were not affected. The variation in varietal susceptibility has also been noted in previous years.

NECK ROT (Botrytis gladiolorum) affected various gladioli varieties at the flowering stage in a Metropolitan flower garden. In one case 5,000 plants out of 20,000 were infected, the infection arising from old foliage.

HIBISCUS:

ROOT ROT (Phytophthora cinnamomi) was reported infecting eight plants in a Castle Hill (M.A.) flower garden.

HYACINTHI:

YELLOW SLIME (Xanthomonas hyacinthi) was observed in bulbs from a commercial grower in the Sydney Metropolitan area. The disease has not previously been seen in a growing crop in New South Wales. The infected bulbs were imported from Victoria.

IMPATIENS (Japanese Balsam):

LEAF NEMATODE (Aphelenchoides sp.) was reported infecting leaves of this plant.

IRIS:

NECK AND ROOT ROT (Rhizoctonia solani) was reported infecting the Xiphium group of Irises growing in a flower garden at Narara (C.C.).

LARKSPUR:

BLIGHT (Tomato spotted wilt virus) was reported infecting 70% of a crop of larkspurs growing at Mt. Colah (M.A.).

NASTURTIUM:

MOSAIC (Virus) was reported infecting a large area of nasturtiums at Palm Beach (M.A.).

OAK:

POWDERY MILDEW (Microsphaera alphitoides) was reported heavily infecting trees in the Sydney Metropolitan area. The imperfect stage only was found.

OLEANDER:

STEM GALL (Pseudomonas savastanoi var. nerii) was observed at Yanco (M.I.A.) on trees growing adjacent to olive trees showing olive gall. Different varieties of the bacteria, however, are believed to be involved. The gall is also present in the Sydney Metropolitan area heavily

infecting a number of bushes after flowering, the fruit are also affected by the gall.

ORCHID (Cymbopodium sp.):

SCLEROTIUM ROT (Sclerotium rolfsii) was reported causing very severe rotting of orchids growing in tan bark in the Sydney Metropolitan area.

RHODODENDRON:

SHOOT BLIGHT (Phytophthora sp.) was reported causing the death of 20% of young imported grafted bushes at Mt. Wilson (C.T.). The disease is favoured by wet environmental conditions.

ROSE:

WILT (Virus) was reported to be more severe than usual this year on a number of varieties of nursery stock in the Sydney Metropolitan area and Central Tablelands, infection being moderate to severe in most nurseries. High percentage infection could be traced to use of budwood from chronically infected stock plants. Multiflora stock and possibly other varieties are believed to carry the virus symptomlessly. Vein clearing was rather prominent in leaves from affected shoots this year for the first time here although this symptom has been observed elsewhere.

WILT (Verticillium sp.). A low percentage was reported on multiflora stock causing dieback of the canes.

SALT INJURY. Salt was found to cause injury to roses observed at Cobar (W.D.) during the year.

SAINTPAULIA (African Violet):

POWDERY MILDEW (Oidium sp.) was recorded for the first time in N.S.W. on Saintpaulia plants observed in the Sydney Metropolitan area.

SILKY OAK (Grevillea robusta):

LEAF SPOT (Amphichaeta grevilleae) was noted in New South Wales for the first time on a specimen from the Sydney Metropolitan area. The disease was first recorded in Ceylon in 1950.

STATICE:

FLOWER BLIGHT (Botrytis cinerea) reduced the quantity and quality of bunches of statice flowers grown at Terry Hills (M.A.). The disease was less severe in open situations, requiring cool night temperatures and heavy dews.

STOCK:

MOSAIC (Virus) was observed on 100% of plants which had reached the flowering stage. The plants were growing in a commercial farm at Temora (S.W.S.).

LEAF SPOT (Alternaria brassicae) caused disfigurement of the leaves at picking time. The seed had been saved from the previous year's crop by the grower at a metropolitan flower garden.

SWEET PEA:

BLIGHT (Vascular wilt virus) identical with that described by Stubbs in broad beans, was widespread in sweet-pea varieties in the Sydney Metropolitan area. New growth after the initial blighting, however, appeared to be symptomless.

ROOT KNOT (Meloidogyne sp.) was very heavy in seedlings of various varieties in the metropolitan gardens.

WALLFLOWER:

CLUB ROOT (Plasmodiophora brassicae) was recorded on this host for the first time in New South Wales. A number of seedlings growing at the Botanic Gardens (M.A.) were found to be heavily infected.

WARATAH:

COLLAR ROT (Rhizoctonia solani) was reported to be causing heavy infections in the Sydney Metropolitan area. This rot has been known for many years but has not previously been recorded in the lists.

ZINNIA:

COLLAR ROT (Rhizoctonia solani) caused heavy infections on plants growing in flower gardens in the Sydney Metropolitan area.

VEGETABLES.

ASPARAGUS:

SHOOT ROT (Fusarium oxysporum associated). Specimens of asparagus shoots submitted from Cowra (C.T.) were showing a bluish green rot of the outer tissue. Fusarium oxysporum was isolated and pathogenicity tests will be undertaken. The grower reported that plants in only one section of a 400 acre crop were affected.

BEAN:

BEAN SEED CERTIFICATION: In co-operation with the Division of Plant Industry, the Bean Seed Certification Scheme was continued for the twelfth successive season. Of the 385 acres submitted for certification, 329 acres were passed, with an estimated total yield of 3,695 bushels of certified seed. This was made up mainly of 2,800 bushels of Brown Beauty (78%). Hawkesbury Wonder, Tweed Wonder and Gowards Special made up the bulk of the remainder. This season, no crops were rejected for the presence of zero tolerance diseases, in spite of very favourable weather for their development during February and March. The behaviour of the Vickery strain of Brown Beauty has been outstanding in freedom from anthracnose on the South Coast, no infection having been recorded during the past three seasons.

ANTHRACNOSE (Colletotrichum lindemuthianum). While only one case of this disease was seen in bean crops on the South Coast, it was widespread and severe on the North Coast. This heavy field infection was reflected in the large number of consignments affected with the pod spot

phase of the disease received at the Sydney Municipal Markets. In the field, Tweed Wonder showed good resistance, indicating that the main strain present was Strain 1. During the summer months, the incidence of this disease decreased but with the coming of autumn, consignments of beans received from the North Coast again began to show quite heavy anthracnose infection.

Anthracnose and rust are now the two most important bean diseases in New South Wales. Continued selection and testing has resulted in a line of Brown Beauty in which all plants are resistant to Strain 1 of the anthracnose fungus and work is continuing to produce lines resistant to both of the strains known to be present in New South Wales. During the year, numerous cross-bred lines were tested for resistance to both strains of anthracnose and some lines with resistance to both strains were found. Testing for anthracnose and rust resistance is also under way on numerous lines produced by Professor W.L. Waterhouse. The anthracnose resistant selection from Hawkesbury Wonder has been carried on to the next generation and testing has shown that it is segregating for resistance. Further selection work is being carried out.

Testing of seed of several introduced bean varieties indicates that considerable differences may exist between the strains of anthracnose in New South Wales and those of the country from which the seed was obtained. Further work on the comparison of these strains by noting their reaction on various varieties is in progress.

RUST (Uromyces phaseoli typica). In the winter of 1954, some of the worst rust for many years was seen in bean crops on the North Coast. Later in the year the severity of rust declined in this area although some infection was reported from Murwillumbah (N.C.) in late autumn. In other localities, rust was not so severe and did not come into prominence until well in the autumn of 1955. Several lines of beans grown at Hawkesbury Agricultural College were examined for rust infection and some promising ones noted. These will be carried on for further rust testing.

BACTERIAL BROWN SPOT (Pseudomonas syringae). Very heavy infections occurred in some spring crops at Gosford (C.C.) in 1954 and pod spotting was reported from Murwillumbah (N.C.) in autumn 1955.

TRANSPORT DISEASES. A number of consignments of beans arriving at Sydney and Newcastle Markets were rejected during the year because of the development of pod rot diseases. ANTHRACNOSE was common and POD ROT due to Sclerotinia sclerotiorum was responsible for heavy loss in one consignment. Another consignment from the North Coast received at the Sydney Markets was affected with GREASE SPOT (Pseudomonas medicaginis v. phaseolica). RUSSET BREAKDOWN (cause undetermined) also caused damage in a number of consignments from the North Coast.

STEM ROT (Rhizoctonia solani) caused some losses in beans in mid-summer on the Murrumbidgee Irrigation Areas.

BEET AND SILVER BEET:

BEET EELWORM DISEASE (Heterodera schachtii). There have been no additional records of beet eelworm disease in New South Wales since the 1953 outbreak at Milperra (M.A.). Careful cultural and rotational practice on the property concerned appear to have satisfactorily confined the parasite.

CERCOSPORA LEAF SPOT (Cercospora beticola). A number of records of this disease were made during the year but there were no records of serious losses in commercial crops.

BROAD BEAN:

VASCULAR WILT (Virus). This disease is now well established on broad bean and other hosts in the Sydney Metropolitan area, where it was prevalent in broad bean crops in the late winter of 1954, causing in some cases practically complete losses. A number of specimens were also received from home gardeners. Very severe infection was also recorded in a plot of broad beans at Yanco(M.I.A.).

SPOTTED WILT (Tomato Spotted Wilt Virus). In recent years there has been a marked decline in the incidence of spotted wilt in Broad Beans.

CARROT:

CERCOSPORA BLIGHT (Cercospora carotae) was responsible for moderate to severe foliage blighting in autumn carrot crops in the Griffith section of the Murrumbidgee Irrigation Areas. It appears that infection had subsisted at a low level prior to the onset of wet weather in late autumn, after which the disease had spread rapidly.

CELERY: No records.

CUCURBITS:

FUSARIUM WILT OF ROCKMELON (Fusarium oxysporum f. melonis). An outbreak of a vascular wilt disease of rockmelon, caused by a strain of Fusarium oxysporum occurred during the year in a market garden at Brookvale (M.A.). This is the first record of this disease in New South Wales. The symptoms - wilting and ultimate death of the vine, closely resemble those of watermelon wilt (F. oxysporum f. niveum), which has been present in this State for many years. A Fusarium wilt of rockmelon has been known overseas since the 1930s.

In the rockmelon crop concerned, infection had occurred in practically 100% of the plants and many plants were dead when the crop was inspected in mid February. Isolates of the fungus obtained from infected vines will be used in glasshouse tests to determine the reaction of a number of rockmelon varieties to the disease.

MOLYBDENUM DEFICIENCY -(1) ROCKMELON: Reference to the importance of the trace element molybdenum in the nutrition of vegetable crops, including rockmelons, in the coastal areas of this State, has been made in previous reports. This year it has been demonstrated that molybdenum deficiency is widespread in rockmelon crops in the Murrumbidgee Irrigation Areas. The deficiency was demonstrated in crops growing on soils which ranged in reaction from very acid to alkaline, which indicated that, in the Murrumbidgee Irrigation Areas, there exists an actual soil deficiency in molybdenum, rather than an unavailability of the element, the latter position being found generally to obtain on the more highly acid coastal soils. The period of fruit setting was markedly prolonged in treated plants. Further work on molybdenum deficiency in this area is proposed, one object being to determine the most efficient and effective method of applying molybdenum to large areas of rockmelons.

(2) CUCUMBER: An abnormal condition of the cotyledons of young cucumber plants was shown to be due to molybdenum deficiency at Lisarow (C.C.). Some days after emergence, the cotyledons were pale yellow down the midline and normal green over the remainder of the leaf. In 80% of the emerging seedlings the cotyledons were split down the middle giving the appearance of four instead of the normal two cotyledons. The soil pH was 4.8 and a chemical test indicated a high level of nitrate in the tissue. A fine spray application of sodium molybdate brought about a rapid improvement in the condition of these seedlings. On the particular farm concerned, seed had been saved from the previous year's crop and it would appear that the molybdenum content of the seed was not sufficient to ensure normal development of the young seedlings.

DOWNY MILDEW (Pseudoperonospora cubensis). Observations made on a rockmelon trial at Gosford Citrus Research Station (C.C.) indicated that Weslaco H was completely resistant. Infection on Rio Sweet (Weslaco C) varied from trace to moderately severe and on Georgia 47, D.P.M.R. 9C008-1, Rio Gold (Weslaco B), and King George from trace to severe.

POWDERY MILDEW (Erysiphe cichoracearum) was far more prevalent than usual on pumpkin, squash and rockmelon in the Murrumbidgee Irrigation Areas.

CRUCIFERS:

CLUB ROOT (Plasmodiophora brassicae). This disease continues to cause losses and to limit crucifer growing on the older established sections of the outer Sydney Metropolitan area. In some cases, fields have been abandoned because of infestation by the club root organism. The practice of growing these crops continuously as the principal winter source of revenue has encouraged the spread of club root.

It was shown experimentally that either mercurous or mercuric chloride, applied to the roots at transplanting, will result in the production of marketable heads on plants grown on infested soil in the Richmond area (M.A.).

DOWNY MILDEW (Peronspora parasitica). Severe infections, due to wet seasonal conditions occurred in autumn in seed beds in the Richmond-Windsor area (M.A.) resulting in a shortage of seedlings at the normal time of planting out.

BLACK ROT (Xanthomonas campestris). This disease was encouraged to some extent by wet autumn conditions but no severe losses were reported in commercial crops.

WHITE LEAF SPOT (Cercosporella albo-maculans). This disease was again in evidence in turnip crops in the Hastings, Macleay and Manning River areas (C.C.) in the autumn but was reported to be not as severe as in the previous season.

The disease was also reported to be general in turnip crops in the Rydal area (C.T.) in late autumn and specimens received from this locality showed severe leaf spotting.

AUTOGENOUS NECROSIS (Non parasitic). Specimens of cauliflower leaves received from a seed producing firm's trial grounds at Dundas (M.A.) were showing numerous necrotic spots and ringspots, principally in the interveinal areas. These symptoms were occurring in lines inbred for two generations and the symptoms agree in many respects with those of an abnormality which appeared in inbred lines of cabbage in U.S.A. (Pound G.S. & Walker J.C. Phytopathology 43:415-417, 1953). The disease is attributed to the influence of recessive genes which are concentrated in inbred lines.

SCLEROTINIA ROT (Sclerotinia sclerotiorum) was recorded in cabbage and cauliflower plants at Yanco Experiment Farm (M.I.A.) and also caused some loss in cauliflowers at Windsor and Richmond (M.A.) during the winter of 1955.

WHIPTAIL OF CAULIFLOWER (Molybdenum deficiency). General application of molybdenum containing compounds to this crop continues to give control of this disease. Two instances only of severe whiptail were observed during the year at Horsley and Richmond (M.A.).

EGG PLANT: No records.

LETTUCE:

DOWNY MILDEW (Bremia lactucae). Conditions in the Taree area (C.C.) in the spring were conducive to infection in lettuce seedlings. Generally in other areas, little infection occurred during the year.

SPOTTED WILT (Tomato spotted wilt virus). In contrast to previous years when heavy losses occasioned by this disease had been recorded in various areas no economic losses were reported in spring or autumn crops this year.

MUSHROOM (Cultivated Strain):

BUBBLES (Mycogone perniciosa). Two outbreaks of this disease were recorded during the year in outdoor ridge beds at Maraylya (M.A.). In both cases some 3,000 square feet of bed were involved. Prompt application of 2% Formalin spray effectively checked the disease.

OKRA:

WILT (Verticillium dahliae) caused heavy loss in a market garden at Caringbah (M.A.) in late summer.

ONION:

BLOAT (Ditylenchus dipsaci) was recorded during the year from Bolwarra (C.C.). It was stated that infection had occurred in a three acre crop. Onions had not been grown on the property concerned for 5-6 years although bloat had been detected there about 8 years ago.

PARSLEY:

LEAF SPOT (Septoria petroselini) was recorded in late winter and autumn in a market garden at Caringbah (M.A.). Severe leaf blighting had occurred in the crop in late winter and in spite of application of thiram sprays new growth in autumn was also heavily infected.

PARSNIP:

CANKER (Itersonilia sp.). During August, September and October, 1954, parsnips from various parts of the Sydney Metropolitan area were found to be affected with canker. Loss in one planting was 70%. The disease has probably been present for some time but the causal fungus has not previously been recognised.

MOLYBDENUM DEFICIENCY was recorded for the first time in this crop at Gosford (C.C.) during the year. Affected plants showed a severe leaf mottling with islands of green tissue 1-2mm. across entirely surrounded by yellow tissue. In some cases necrotic spots had developed in the leaves. Tests with

diphenylamine sulphuric acid reagent indicated an accumulation of nitrate in the affected leaves and the grower subsequently reported a response following a spray application of sodium molybdate.

PEA:

BLIGHT (Broad Bean Vascular Wilt Virus). Up to 100% infection by this virus was recorded in pea crops at Mona Vale and Warriewood (M.A.) in late winter 1954. The disease was first evidenced as marginal scalding of the lower leaves with eventual scalding of all the foliage. The infection was most severe in earlier plantings and less severe in later plantings.

MYCOSPHAERELLA BLIGHT (M. pinodes) and ASCOCHYTA LEAF SPOT (A. pisi). Severe damage due to Mycosphaerella Blight occurred during the year in some crops in the Sydney Metropolitan area. Damage due to Ascochyta Leaf Spot was, however, of minor importance.

PEPPER: (Capsicum) No records.

POTATO:

LEAF ROLL (Virus). Records of crop surveys and of certification inspections during the 1954/55 season indicated that the presence of excess leaf roll in crops submitted for certification was responsible for the rejection of only 0.22% of the total acreage submitted on the tablelands. Rejections for excess leaf roll on the Northern and Southern Tablelands were nil (0% and 0.4% respectively in 1953/4 season) and rejection on the Central Tableland was 3.6% of the acreage (0% in 1953/4). Factors which are considered to have enabled this very satisfactory position in regard to leaf roll disease to be reached are considered to be (1) the virtual disappearance of the variety Factor from certification (11) the release over the last 5-6 years of a number of new varieties which have been increased under strict supervision and rogued thoroughly for leaf roll and other diseases, and (111) the fact that practically all crops grown in the seed producing areas are grown either from certified seed or seed one season removed from certification.

PURPLE-TOP WILT (Tomato big bud virus) occurred in negligible proportions in the spring crop in the Windsor-Richmond area (M.A.). In the main tableland crops, there were two cases of rejection for greater than 5% purple-top wilt content but in other cases infection was generally less than 1%.

EARLY BLIGHT (Alternaria solani). In the Central Tableland early autumn conditions were conducive to the development of this disease. The variety Crana shows high field susceptibility and in some crops of this variety many plants were practically defoliated by early blight at the time crops were inspected. At the same time light to moderate infection was observed in the varieties Adina, Awaba, Exton, Katahdin, Monak and Sebago and very light infection on Aussie, Menominee, Ontario, Saranac and Sequoia. The very late variety Walanga was not infected at that stage.

In the Crookwell section of the Southern Tableland where drier conditions prevailed light infection was observed on Crana and no infection on any other varieties. At Batlow (S.T.) severe early blight infection occurred in Crana following wet weather in early autumn, whereas slight infection only occurred in Awaba and Walanga.

BLACKLEG (Bacterium carotovorum). Blackleg infection in coastal spring crops did not reach serious proportions. In the Sydney Metropolitan area, only isolated plants were affected. In the Maitland area (C.C.) the disease was wholly confined to the variety Sebago and in only one instance did appreciable loss occur. In the Taree area (C.C.), in contrast to previous seasons, only a few instances of blackleg were recorded this spring. In one crop a 6% infection occurred in Sebago and 0.5% in Sequoia.

In the main crop, blackleg was not recorded in the Northern Tableland section and infections in the Southern Tableland were in the order of 1%. On the Central Tableland, however, very heavy rain in early autumn was followed by the development of up to 10% blackleg in some crops on badly drained land although overall infection in this area would have generally been less than 5%.

LATE BLIGHT (Phytophthora infestans) contributed little to yield reduction during the year.

COMMON SCAB (Actinomyces scabies) did not cause losses comparable with some previous seasons.

POWDERY DRY ROT (Fusarium trichothecioides). This disease occasioned losses in seed potatoes which had been held in store by merchants for the 1954 spring sowings. Infection in individual bags varied from 8-20%, and was highest in 7 and 14 lb. bags. It is considered that the original infection had occurred in the field where digging had been carried out in many cases by mechanical potato diggers under dry conditions resulting in damage to the tubers. Temperatures below 50°Fahr. which prevailed at the time would have retarded suberization sufficiently to permit entrance of the organism into cut or injured surfaces but would not have favoured rapid development of the disease. When the tubers were transported to the coast, warmer temperatures had then accelerated the rate of rotting and the additional handling in breaking down 150 lb. bags to smaller bags had increased the percentage of affected tubers.

RHUBARB:

LEAF SPOT (Phyllosticta straminella). Wet conditions in late summer were conducive to heavy infections in rhubarb crops in the Sydney Metropolitan area, resulting in severe leaf destruction.

DOWNY MILDEW (Peronospora jaapiana) caused moderate loss in a market garden at Milperra (M.A.) but was generally of little economic importance during the year.

SWEET POTATO:

SCURF (Monilochaetes infuscans) was present on a number of tubers submitted from Tamworth (N.W.S.). Infection had resulted in flabbiness of some of the tubers.

TOMATO:

SPOTTED WILT (Tomato spotted wilt virus). As usual this disease was widespread. However, it was once again of minor importance in areas where some years ago losses of 50 to 100 per cent. were common in spring and early summer crops. No explanation for the initial or continued decrease in incidence of this disease is forthcoming. In the metropolitan area of Sydney losses were near the one per cent. level, at

Coonabarabran (N.W.P.) 2 to 3 per cent. of plants were affected whilst in the Murrumbidgee Irrigation Areas infected plants ranged from 5 to 10 per cent. on individual properties.

EARLY BLIGHT (Alternaria solani). In the autumn and early winter, unsprayed crops in coastal regions were severely defoliated and much fruit was destroyed. Heavy infection of sprayed plants was reported from Murwillumbah (N.C.) in July. Leaf and stem lesions were abundant on mature plants at Coonabarabran (N.W.P.) in March. No crop inspected was entirely free of this disease but in most cases satisfactory commercial control was achieved by the application of fungicidal sprays, mainly Bordeaux mixture.

FUSARIUM WILT (Fusarium oxysporum f. lycopersici). Losses due to this disease were less than usual though no varieties containing the single dominant factor for resistance are yet grown commercially. Up to 3 per cent. wilts occurred in individual glasshouses in the Warriewood-Mona Vale district (M.A.) despite soil fumigation with chloropicrin. In these cases it is believed that methods of application of the fumigant were not satisfactory. Up to 10 per cent. losses were observed in the variety Rouge de Marmande on old tomato land in the Liverpool (M.A.) district. The varieties Tatura and Tatinter, grown in old tomato land on the Murrumbidgee Irrigation Areas, showed losses of up to 5 per cent.

BACTERIAL SPOT (Xanthomonas vesicatoria). Plants of Rouge de Marmande were severely defoliated in late autumn in some crops at Murwillumbah (N.C.) and less severe infections were recorded in the Coff's Harbour (N.C.) district. Elsewhere trace infections only were observed.

LEAF MOULD (Cladosporium fulvum). Excessive rain during autumn favoured the development of leaf mould in outdoor crops in the Gosford (C.C.) district and resulted in this disease becoming one of major importance in that area. Severe defoliation was recorded, particularly in February and March. Leaves killed by leaf mould were frequently attacked by Botrytis and facilitated the entry of this fungus into fruit and other plant parts particularly during wet spells.

As usual leaf mould was the most troublesome disease in glasshouses.

SEPTORIA LEAF SPOT (Septoria lycopersici) was prevalent in private gardens in the Sydney Metropolitan area and also caused severe defoliation in a commercial crop at Murwillumbah (N.C.). All of several varieties were moderately attacked on a seed producing farm at Coonabarabran (N.W.P.) though Manalucie probably showed some resistance.

UNIDENTIFIED DISEASE (Virus). This disease, which may be caused by the yellow dwarf of tobacco virus, is now widespread in the Sydney Metropolitan area and on the Central Coast though it has not yet been recorded from inland areas. Up to 100 per cent infection was noted in some crops and interference with fruit set was greater than in past seasons. It also occurred on the North Coast but in this area symptoms were not so well developed and only a low percentage of plants were affected.

BACTERIAL WILT (Pseudomonas solanacearum). 1,300 of 2,000 plants in one crop at Terranora (N.C.) were destroyed by this disease, which also caused serious losses in other crops throughout the Tweed-Richmond districts (N.C.). Isolated reports were received from the Sydney Metropolitan area.

BACTERIAL CANKER (Corynebacterium michiganense). At Wedderburn (M.A.) 60 per cent. of one crop was affected. There were no other reports.

BLOSSOM END ROT (Non parasitic). This disease was prevalent throughout the Sydney Metropolitan area following a heat wave early in January.

MISCELLANEOUS PLANTS.

BIMLIPITAM JUTE (Hibiscus cannabinus):

STEM ROT (Sclerotinia sclerotiorum and Botrytis cinerea) caused severe damage to many plants at Grafton (N.C.) during early spring. Plants were attacked some distance above ground level and the stem completely girdled. These diseases have not previously been recorded in N.S.W.

BLACKBERRY (Rubus fructicosus):

FRUIT ROT (Botrytis cinerea) was very severe on plants at West Pennant Hills (M.A.) during the wet late summer months. The disease, although present for many years, has not previously been recorded.

DIPTERACANTHUS AUSTRALIS (formerly RUELLIA AUSTRALIS):

RUST (Puccinia mussoni), first recorded by McAlpine in 1896, was found at Toongabbie (M.A.). This disease does not seem to have been found since McAlpine's original record.

MOSS LAWN (Sagina subulata):

BROWN PATCH (Rhizoctonia solani) was particularly heavy on this host in many areas.

N.Z. BLUE LUPIN (Lupinus angustifolius):

VASCULAR WILT (Virus) caused a 75% loss in a crop of N.Z. blue lupins grown for green manure at Mona Vale (M.A.). The growing point of affected plants was blackened and growth was stopped.

STEM ROT (Rhizoctonia solani) was recorded for the first time in N.S.W. from the Sydney Metropolitan Area. The disease developed during damp summer weather and attacked the stem of the plants at and just above ground level.

SESAME (Sesamum indicum):

LEAF ENATIONS (cause undetermined) were recorded on sesame plants growing at Grafton (N.C.) Experiment Farm.

SHEPHERD'S PURSE (Capsella bursa-pastoris):

WHITE RUST (Albugo candida) heavily infected shepherd's purse in the Taree (N.C.) area during the late winter. Seed and flower stalks and pods were attacked.

WILD RADISH (Raphanus raphanistrum):

DOWNY MILDEW (Peronospora parasitica) heavily attacked some wild radish at West Pennant Hills (M.A.) following the wet weather in February and early March. Leaves, stalks and pods were all severely affected and in the early morning profuse development of the fungus on the lesions could be seen. This is the first record of downy mildew on this host in N.S.W.

WHITE RUST (Cystopus candidus) was present in small amounts on plants at West Pennant Hills (M.A.) and had not previously been recorded on this host in N.S.W.

NEW PLANT DISEASES.

During the twelve months ending 30th June, 1955, the following diseases were recorded for the first time in New South Wales:-

Ajuga metallica (Ajuga).- Meloidogyne sp. (Root knot); Metropolitan area.

Allium cepa (Onion).- Botrytis alii Munn (Grey mould neck rot); Metropolitan area; Erwinia carotovora (Soft rot of bulb); South coast (old record).

Beta vulgaris (Fodder beet).- Agrobacterium tumiefaciens (Smith and Towns) Conn. (Crown gall; Cercospora beticola Sacc. (Leaf spot); Pseudomonas aptata (Brown & Jamieson) Stevens (Bacterial blight); Taree.

Beta vulgaris var. cicla (Silver beet).- Beet mosaic virus; Metropolitan area; Corticium rolfsii (Sacc.) Curzi (Stem rot); Metropolitan area.

Bignonia grandiflora (Bignonia).- Cercospora sp. (Leafspot); Metropolitan area.

Calceolaria crenatiflora garden hybrid (Calceolaria) Phytophthora cinnamomi Rands (Crown rot); Metropolitan area.

Callistemon coccineus (Red bottle brush). - Cercospora sp. (Leaf spot); Metropolitan area.

Camellia japonica (Camellia). - Exobasidium camelliae Shirai (Leaf gall); Metropolitan area (old record).

Centaurea cyanus (Cornflower).- Tomato spotted wilt virus (blight) and Cucumber mosaic virus (mosaic); Metropolitan area.

Chaenomeles lagenaria garden hybrid (Flowering quince).- Botrytis cinerea Pers. (Shoot blight); Metropolitan area.

Chrysanthemum hortorum (Chrysanthemum). - Ascochyta chrysanthemi Stev. (Ray blight); Metropolitan area, Narara.

Clematis aristata (Clematis). - Oidium sp. (Powdery mildew); Coonabarabran.

Cyclamen giganteum (Cyclamen). - Botrytis cinerea Pers. (Leaf and flower mould); Metropolitan area; Aphelenchoides sp. (Leaf eelworm); Metropolitan area.

Cucumis sativa (Apple cucumber). - Fasciation (non-parasitic); Metropolitan area.

Cynodon transvalensis (African couch grass). - Corticium fuciforme (Berk.) Wakef. (Pink patch); Tenterfield.

Danthonia linkii (A wallaby grass). - Uromyces danthoniae McAlp. (Rust); Glen Innes.

Delphinium ajacis (Larkspur). - Tomato spotted wilt virus (Shoot blight); Mt. Colah.

Digitalis lanata (Foxglove). - Verticillium dahliae Kleb. (Wilt); Metropolitan area.

Diospyros kaki (Persimmon). - Leptothyrium pomi (Mont. & Fr.) Sacc. (Flyspeck); Metropolitan Area.

Echium thyrsiflorus. - Fasciation (Non-parasitic); Metropolitan area.

Erigeron bonariensis (Flax leaf fleabane). - Linear fasciation (non-parasitic); Richmond.

Eucalyptus citriodora (Lemon scented gum). - Verticillium dahliae Kleb. (Wilt); Metropolitan area.

Euphorbia peplus (Petty spurge). - Meloidogyne sp. (Root knot); Metropolitan area.

Hibiscus cannabinus (Bimlipitam jute). - Sclerotinia sclerotiorum (Lib.) DeBary and Botrytis cinerea Pers. (Stem girdle and rot); Grafton

Hordeum leporinum (Barley grass). - Erysiphe graminis DC. (Powdery mildew); Tamworth.

Hyacinthus orientalis (Hyacinth). - Xanthomonas hyacinthae (Walker) Dowson (Yellow slime); fasciation (non-parasitic); Metropolitan area.

Hydrangea hortensis (Hydrangea). - Tomato big bud virus (Greening); Metropolitan area.

Impatiens sultani (Balsam). - Aphelenchoides sp. (Leaf eelworm); Metropolitan area.

Indigofera enneaphylla (Birdsville indigo). - Meloidogyne sp. (Root knot); Grafton.

Linaria vulgaris (Lead flax.) - Meloidogyne sp. (Root knot); Metropolitan area.

Lupinus angustifolius (New Zealand blue lupin). - Rhizoctonia solani Kuehn. (Stem rot); Metropolitan area.

Medicago denticulata (Burr medic). - Uromyces striatus Schroet. (Rust); Metropolitan area; Sphaerulina trifolii Rostr. (Scorch); Metropolitan area.

Nicotiana glutinosa and N. sylvestris. - Peronospora tabacina Adam (Blue mould); Metropolitan area.

Paeonia officinalis (Peony). - Botrytis cinerea Pers. (Blossom blight); Mt. Wilson.

Paeonia suffruticosa (Tree peony). - Meloidogyne sp. (Root knot); Mt. Wilson.

Pastinaca sativa (Parsnip). - Itersonilia sp. (Root canker and petiole and leaf spot); Metropolitan area.

Pelargonium hortorum (Garden geranium). - Botrytis cinerea Pers. (Blossom blight); Metropolitan area.

P. peltatum (Ivy geranium).- Cercospora brunkii Ell. & Gall (Leafspot); Metropolitan area.

Poa annua (Winter grass). - Meloidogyne sp.(Root knot); Metropolitan area

Poa queenslandica. - Titaea sp. (Leaf spot); Hastings R.

Raphanus raphinistrum (wild radish). - Peronospora parasitica (Pers. ex. Fr.) Tul. (Downy mildew); Metropolitan area; Cystopus candidus (Pers. ex. Chev.) Lev. (White rust); M.A.

Rosa sp. (Polyantha, garden hybrid). - Big bud virus (greening); Metropolitan area.

Rubus fruticosus (Blackberry). - Botrytis cinerea Pers. (Fruit mould); Metropolitan area.

Saccharum sp. (Cow cane). - Ratoon stunting (virus); Fiji disease (virus); and Fusarium moniliforme (Pokkah Boeng); Kempsey.

Saintpaulia ionantha (African violet). - Oidium sp. (Powdery mildew); Metropolitan area.

Sesbania sp. - Meloidogyne sp. (Root knot); Grafton

Sorghum halepense (Johnson grass). - Helminthosporium sp. (Leafspot); Metropolitan area.

Stellaria media (Chickweed). - Septoria sp. (Leafspot and blight); Digman's Creek.

Statice sinuata (Statice). - Botrytis cinerea Pers. (Flower blight); Metropolitan area.

Taraxacum officinale (Dandelion). - Ramularia taraxaci Karst. (Leafspot); Metropolitan area.

Telopea speciocissima (Waratah).- Rhizoctonia solani Kuehn. (seedling damping off); Metropolitan area.

Trifolium pratense (Red clover). - Meloidogyne sp. (Root knot); Taree; Pseudomonas syringae V. Hall (Bacterial leaf blight); Oberon.

T. subterraneum (Sub. clover). - Meloidogyne sp. (Root knot); East Coraki.

Zea mays (Maize).- Cercospora sp. (Leafspot); Glen Innes; Corticium rolfsii (Sacc.) Curzi (Stalk rot); Murwillumbah; Colletotrichum graminicola (Anthracnose); Glen Innes.

Vigna sinensis (Cow pea). - Macrophomina phaseoli (Maubl. Ashby; (Charcoal rot of stem); Gunnedah.